Honours Project (CCIS)

INTERIM REPORT

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"**Except where explicitly stated, all work in this report, is my own original work and has not been submitted elsewhere in fulfilment of the requirement of this or any other award**"

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1. Introduction

1.1 Background

A well-functioning society relies on people making decisions based on highly developed moral reasoning. The democratic process of western countries needs a moral society to function as intended. (Kohlberg, 1984) Many scholars are concerned that videogames may have a negative impact on one's morality. (Gollwitzer and Melzer, 2012) People say and do things in virtual spaces that they would never do in reality. The public is concerned that videogames may make players, especially young ones desensitized to violence, warping their morality, (Teng et al., 2017) while others argue that is not the case. (Schulzke, 2010) However, some researchers suggest that playing video games may actually be a way to develop and improve one's moral reasoning, even when acting immorally in-game. (Schrier, 2016) (Simkins and Steinkuehler, 2008) The possibility of exploiting the medium of videogames for societal moral improvement merits further investigation.

1.1.1 Moral Development Theory

The moral development of an individual is a continuous process with no end state. An individual's morality and ethical thinking evolves throughout their lives as a result of multiple influences and experiences. (Schinkel and de Ruyter, 2016)

Multiple competing theories of moral development exist. The most widely used and accepted one was created by Lawrence Kohlberg in 1958. Building on the work of Jean Piaget, Kohlberg theorized that as people grow, they go through six distinct and universal stages of moral development. According to his theory, stages always follow each other in the specific order as laid out by him, stages cannot be skipped, and regressing back onto a previous stage is not possible either, though people can get stuck on a stage.

The stages are grouped into three larger overall levels:

- Pre-Conventional
    - o Obedience & Punishment

      Self-interest

- Conventional
    - o Good Boy & Good Girl
    - o Law + Order

- Post-Conventional
    - o Social Contract
    - o Universal Ethical Principle

The first two stages make up the pre-conventional level, where decisions are made based on an egocentric point of view.

"Obedience and Punishment" deals with children, who exist in a world where authority is outside the individual, and decisions are made based on avoidance of punishment by physically superior agents.

In the "Self Interest" stage people recognize the existence of different points of view, values and interests existing in different people. Decisions are made based on one's own selfinterest, and when conflicts arise, they should be resolved by bargaining or equal distribution of resources.

The third and fourth stages make up the conventional level, where societal rules are given greater emphasis.

In "Good Boy & Good Girl" people can take an outside perspective to judge their own actions. People at this stage are most concerned by society's judgement of them, as they seek to conform to improve their interpersonal relationships.

In "Law & Order" individuals become able to empathize with more people, like the leader or other members of a community. Decisions are made to maintain the social system by following the rules. This can be observed on many levels, such as families, communities, countries, etc.

The fifth and sixth stages form the post-conventional level, where morality becomes a selfchosen set of principles, independent of society. Decisions are made by taking an impartial outside perspective.

In "Social Contract" the individual understands that there are a multitude of different sets of moral values that are unique to the individual. Laws are viewed as a social contract the individual enters willingly, and that sometimes they are unjust, or work against an individual's needs, and therefore society must come together to correct them in a majority decision. They recognize the necessity to protect everyone's human rights because they are necessary for an individual to enter into the social contract. The democratic system is based on stage five reasoning.

In "Universal Ethical Principles" the individual makes decisions based on universal ethical principles. Decisions are made using empathy, and actions are taken because it is the right thing to do. People who reach this stage are committed to justice above laws, and indeed if they discover that a law is unjust they are willing to take action against it, and even break the law when necessary. According to Kohlberg very few individuals ever reach this stage. Great human's rights leaders are associated with stage six reasoning.

Kohlberg is heavily criticised for several reasons including only examining a subset of humanity and his theory being overly structured. (Gibbs, 2014) Rest et. al. created a new, Neo-Kohlbergian theory, to address the concerns with Kohlberg's theory. Kohlberg assumes the existence of Foundational Principles from which stage 6 thinking is derived, but moral philosophers have been unable to find consensus to these principles. Instead of this top-down approach, Rest assumes that moral principles emerge from judgement on individual cases. Kohlberg is also criticised for "not having a fully comprehensive theory of morality or moral development (focusing on justice; using a few unrepresentative hypothetical dilemmas; emphasising rational aspects of morality while neglecting emotional aspects; claiming universality on the basis of studying a very limited scope of humanity." (Rest et al., 2000) To address this, Rest identifies schemas instead of stages. Schemas are cognitive frameworks that

help recognize and interpret information. One person may utilize multiple different schemas, while in Kohlberg's original theory they may only be associated with one stage.

This allows a more nuanced and less restrictive way of examining an individual's morals, by measuring which schemas they apply more frequently than others.

Three schemas were identified:

1. Personal interest schema, derived from Kohlberg's Stages 2 and 3
2. Maintaining Norms schema, derived from Kohlberg's Stage 4
3. Postconventional Schema, derived from Kohlberg's Stages 5 and 6

(Rest et al., 2000)

For identifying an individual's schemas, Rest developed the most used quantitative test of moral development, the Defining Issues Test, or the DIT. The DIT presents a series of moral dilemmas and requires subjects to rate considerations on how much they used them in their decision-making process. The DIT and its later iteration, the DIT-2 have been shown to be an accurate measure of an individual's moral development by multiple researchers. (Bailey, 2011) (Thoma et al., 1999) It is designed to filter out individuals attempting to fake a high score, as well as those with antisocial tendencies. It produces three scores associated with the schemas of Rest's theory. (Thoma and Dong, 2014)

1.1.2 Ethics education

As functioning democracies are based on post-conventional moral reasoning, it stands to reason that society needs the majority of individuals to reach Postconventional moral reasoning to maintain itself, and to bring necessary change. Ethics education has been proven to be effective in improving moral reasoning in individuals in a multitude of different fields, such as medicine, law, (Liu and Hu, 2012) and business. (Jones, 2008) According to Cubie L. L. Lau (2009) ethics education among business students improved their ethical awareness and moral reasoning.

1.1.3 Videogames and ethics

Initial research by Karen Schrier (2016) and David W. Simkins (2008) indicates that playing digital role-playing games involve ethical thinking, dilemmas and decision making in a safe environment. They show that players engage with these themes and that maybe games can be used to improve the moral development of individuals. Even when acting in a game in an immoral way or making decisions that they would not do in real life, players still exercise their moral reasoning and explore alternative moralities that can help them develop their own.

Moral decision-making is a mainstay feature of narrative-driven videogames, derived from the tradition of alignments in table-top RPGs. These moral dilemmas can elicit different thought processes form players depending on their presentation. These techniques will be detailed in the Literature review section. When presented the right way, they can allow the player to "reflect on the deeper meanings of their in-game actions" and help develop their ethical thinking. (Heron and Belford, 2019)

1.1.4 Educational games

Serious games have been used for decades in education. Providing simulated environments for students and professionals to apply their knowledge or learn new skills as they play. The high level of engagement, and participatory learning results in new lessons being more deeply

internalized retained for longer than through simple classroom learning. (Ricci, Salas and Cannon-Bowers, 1996) On the other hand, educational games are more expensive to produce than classroom education, and the delivered material is a smaller amount. With ethics education these properties are a perfect match, as the expected learning outcomes aren't concerned with the quantity of material delivered, but the change in thinking.

1.1.5 Takeaways

- Moral individuals are important to society
- Morality develops through stages or schemas that can be measured
- Morality can be developed through education
- Role Playing Games involve ethical thinking
- Educational games are theoretically a perfect match for ethics education

Research question: Can Role Playing Games be used to improve moral judgement?

1.2 Project Outline

The aim of the project is to investigate the potential of Role-Playing Video Games for improving moral judgement. The overall project plan is laid out below, the detailed objectives can be found in Appendix A.

The literature and technology review will investigate existing research and theory on the representation of morality and ethics in video games. It will identify any frameworks that may be used to design the digital artefact. It will identify the best method to measure morality. It will investigate previous research into ethics education and identify the best practices to follow. The technology review will examine the development environment.

The project aim will be achieved by developing a Role-Playing Game Modification that strongly engages the player's moral reasoning, forcing them to make decisions in moral dilemmas. The effects of the game on moral development will be evaluated by measuring the moral development status of a sample of university students before they play the game, and after. Their scores will be compared to a control group that won't play the game just take the test at same times as the experimental group. The Defining Issues Test 2 (or DIT-2) has been identified as the best measurement of moral development, and it will be used for this project. Since the participants will be subjected to the same test twice, these measures have to be spaced out over time, so the subjects can't recall their earlier answers any more. The initial test should take place 3 months prior to the actual playing of the game and re-taking of the test. By comparing the before and after scores of the subjects, the effects of the game can be measured.

1.2.1 The hypothesis

It is hypothesized that after playing the game participants in the experimental group will have a significantly lower Personal Interest Schema score, and a significantly higher Postconventional Schema score and N2-score than the participants in the control group.

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2 Literature and Technology review

2.1 Morality in video games

2.1.1 What is Ethical play?

To find the best way to improve moral thinking the first important question to answer is what moral thinking is and how it works in the context of games. Moral thinking involves "analysing, interpreting and evaluating ethical issues, choices and situations". (Schrier, 2015) Regarding moral thinking in games, Miguel Sicart (2013) delineates between instrumental thinking and ethical thinking. Instrumental thinking is when the player engages their rational mind to work towards a predefined goal. This is the way players think most of the time while playing a game. In order to engage in ethical decision making, the player must first abandon instrumental thinking. (Sicart, 2013) This can be achieved when all options result in the same (or very similar) gameplay rewards, and none of them can be identified as "the best" option. For this purpose, he identifies wicked problems: "a class of social system problems which are ill-formulated, where the information is confusing, where there are many clients and decision-makers with conflicting values, and where the ramifications in the whole system are thoroughly confusing." This forces the player to abandon trying to find the "best" solution and engage their ethical thinking to find what they believe is the right thing to do. (Sicart, 2013)

This is a valuable insight, but it can be criticised for not considering the potential in challenging the player's morals by making a strongly unethical choice extremely beneficial for instrumental gameplay. One such game is Vampyr (Focus Home Interactive, 2018), where the player takes on the role of a Vampire, who is also a doctor and is trying to stop the Spanish flu in London during the first world war. The player character becomes significantly stronger from drinking the blood (and so killing) civilians – which is clearly an evil act. The civilians are all depicted as complex characters with rich personal histories and ethical failings of their own, and the player gets to know them throughout the game. The player can choose to do the right thing and kill no-one, but by doing so the gameplay becomes significantly harder. Since the player character's overall goal – stopping the flu – is for the greater good, the player might able to justify unethical choices along the way. This creates a very engaging, ongoing moral dilemma, that is integrated into instrumental play.

Sicart is contradicted by José P. Zagal's Ethically Notable Videogames (2009). One of the examples he brings up as an Ethically Notable game, is Ultima IV: Quest of the Avatar (Origin Systems, 1985) where the player character seeks enlightenment by advancing 8 virtues (Compassion, Valor, Honor, Justice, Humility, Sacrifice, Spirituality, and Honesty). Each virtue is improved or weakened by making moral decisions in game. By Sicart's definition this wouldn't constitute ethical play, as it has been set as the instrumental goal of the player to "be good", and no real moral deliberation happens, the player simply chooses the option that advances them towards the game's end. This contradiction is resolved by Karen Schrier's EPIC framework (2015), listing "Modeling through avatar or character" as one of the strategies games can use for ethics education. If the player can learn through modeling, it doesn't matter if the player is merely trying to find "the best" outcome, they can still learn about ethics through observing the actions of characters in the game. (Schrier, 2015)

2.1.2 Sicart's Principles

Sicart goes on to identify a set of general principles to design morally relevant gameplay. (Sicart, 2009) Not all of these are required in every ethical game, only some combination of

them, as some of these are contradicting each other. The full breakdown of the principles can be found in [Appendix B](#).

1. **'Create an ethically relevant game world'**
2. **'Do not quantize your player's actions: let them live in a world that reacts to their values'**
3. **'Exploit the tension of being an ethical player'**
4. **'Insert other agents with constructivist capacities and possibilities'**
5. **'Challenge the poietic capacities of players by constraining them'**

(Sicart, 2009)

Principle numbers 1 and 3 are the most relevant to this project. The player must be informed early, and reminded often, that they are acting in an ethically relevant game world. They need to consider their actions from a new perspective and can't be expected to know this on their own. The player's ethics should be challenged repeatedly through the gameplay.

2.1.3 Morality systems

Because the player needs to be notified of the ethical relevance of their decisions, often games try to draw focus to their ethical gameplay using clear mechanical morality systems. These usually come with some kind of gameplay benefit, should the player achieve one of the extremes of the scale. Michael James Heron & Pauline Helen Belford (2019) identified the many ways games create mechanical morality systems. The full explanation of different morality systems can be found in [Appendix B](#).

Heron and Belford also pointed out that all these quantified systems often cheapen the actual ethical decisions. Miguel Sicart (2009) criticises games with any kind of mechanical moral framework, because they turn ethical decisions into instrumental ones, robbing the player of the ability to construct their own ethics. "The ethical experience in these games is limited to a mere calculation of possibilities, numbers and choices that do not affect the ethical constitution of the player as an agent. They don't experience ethical gameplay, they play with ethics." (Sicart, 2009) By applying Sicart's criticism to these systems, the conclusion is that only what Heron and Belford classify as "non-diegetic" (meaning there is no in-game mechanical representation of morality) games can provide an environment where true ethical decisions can be made.

The game that was chosen for hosting the artefact of this project is The Elder Scrolls V: Skyrim (2011) which is a game with non-diegetic morality, and therefore it follows Sicart's requirements.

2.1.4 Karen Schrier's Framework

The most extensive work about morality and ethics in videogames has been created by Karen Schrier in her "*EPIC: a framework for using videogames in ethics education*" (Schrier, 2015), that presents 7 educational goals and corresponding 12 strategies regarding the use of videogames in ethics education. Schrier's framework provides extensive guidance for the design of the digital artefact of this project. It is important to note that these are not exclusive categories and have overlapping components. These goals are not exclusive to games as they are applicable to all ethics education.

Schrier's 7 goals are broken down in detail in [Appendix B](#), but for the purposes of this project 3 of them have been identified as the most relevant. As the project is specifically concerned

with the genre of role-playing games, these goals and strategies are more applicable. The game will have following primary ethics education goals:

Enhance Ethical awareness – Enhancing ability to recognize moral situations and dilemmas and realize the ethical implications of actions.
Practice Ethical reasoning – Directly practicing analysing, understanding and thinking about moral dilemmas improves one's ability to make sound ethical decisions in the future. **Practice Ethical reflection** – Reflecting on ethical issues and decisions – including one's own decisions, assumptions, and biases – is a crucial step in personal moral development. Having an experience is not enough to achieve transformative learning, one has to reflect on those experiences to change. (Merriam, 2004)

Schrier provides 12 strategies for moral development through games, the full breakdown of which can be found in , the table below explains the ones used in the project.

Strategy	Description	Use in project
Diaries and personal reflection devices	Games can allow ethical reflection by including a diary containing previous events in the game's timeline, as well as reflective moments, when previous events and decisions are discussed.	Non-player characters will question the player on their moral decisions to allow them to look back and reflect on them.
Role-taking and roleplaying	A tool for experiencing new perspectives on issues	The player will take on the role of an in-game character and make ethical decisions from their perspective.
Choices and consequences	Allow players to make choices in their gameplay and experience the different short- and long-term outcomes those choices create. The game provides clear feedback and causal links for the player to explore.	The player will make ethically complex decisions in the game and deal with the consequences.
Deliberation, dialogue and discourse	Discussing cases of ethical judgement allows the player to practice ethical reflection. Games using this strategy challenge the player avatar's ethics or decisions and force them to argue their points.	The player will engage in simulated conversation with non-player-characters regarding ethical issues, and judgement encountering a variety of opinions and morals.
Procedural exploration and interaction	The ethical implications are communicated directly through the rules and mechanics, and can be discovered through exploration of the game. The game makes a statement about ethics through the way players play it.	There will be some non-obvious ethical decisions that emerge from the game's mechanics, such as the choice to avoid conflict with human enemies rather than fight and kill them.
Nudges	Provide nudges (subtle changes and calibration that affect decision-making (Selinger and Whyte, 2010)) or clues to motivate the player to be more ethically aware or sensitive, motivated, or reflective of ethics. (Schrier, 2015)	The enemies will carry items that gives them more depth and humanity in order to signal to the player that they are more than mechanical challenges. Such items will be: letters to loved ones, diaries, toys, books, and other personal items that humanize them.

2.2 Measuring moral judgment

Most early measures of moral judgement, such as Kohlberg's Moral Judgement Interview, are interview-based and require extensive training to be used (Anne Colby & Lawrence Kohlberg, 1987) because interviews were assumed to be the only accurate measure of morality. (Rest, 1999) Since the development of the DIT there have been other attempts to create a universal measure of moral judgement, such as the "Sociomoral Reflection Measure– Short Form", but

none have been as widely used as the DIT – in more than 200 published articles (Center for the Study of Ethical Development, 2019).

James R. Rest created the DIT to measure an individual's use of the different schemas of moral judgement he identified: The Personal interest schema, the Following norms schema, and the Postconventional schema. Each is represented by a score indicating the proportion of items selected that appeal to these schemas. Later the N2 score was created, which combines the Postconventional schema score with the degree to which personal interest items receive a lower rating than the ratings given to post-conventional items. The N2 score usually provides a more powerful index compared to the other schema scores, and is therefore a useful measure for this project. The DIT-2 was developed in 1999, to be the newer version of the DIT, originally created in 1974, and has multiple advantages over the original. It takes 5-20 minutes less time to complete, has strong built-in reliability checks to filter out bogus data, contains more current moral dilemmas and produces more reliable and valid results. (Rest et al., 1999)

The DIT-2 is a fast and practical quantitative test and is a perfect match for this study.

2.3 On Ethics education research

Ethics education is often researched in the context of different professions, where ethical behaviour is paramount. Nursing, accounting, medicine, law and business are all fields where ethics education was suggested to improve the moral judgement of subjects. Most often the measure used is the DIT or the DIT-2, but occasionally other measures, such as the Sociomoral Reflection Measure–Short Form or custom measures are used. (Sorensen, Miller and Cabe, 2015; Lin et al., 2010; Singhapakdi, Vitell and Leelakulthanit, 1994; Jones, 2008; Cubie L. L. Lau, 2009)

The research methodology in most examined examples was the same: Pre-test, "intervention" post-test, Quasi-experimental method, controlled by a group that didn't receive an intervention. In order to produce comparable results, the project will follow this best practice. (Sorensen, Miller and Cabe, 2015; Lin et al., 2010; Singhapakdi, Vitell and Leelakulthanit, 1994)

2.4 Technology review

The development environment used to develop the artefact is the Skyrim Creation Kit (Bethesda Game Studios, 2012), the most widely used modding tool available. The largest mod collection on the internet, nexusmods.com currently hosts more than 60 000 mods for The Elder Scrolls V: Skyrim (Bethesda Game Studios, 2011), which is by far the largest of any game. The Skyrim Creation Kit is easy to use and allows for the creation of environments, quests and stories, with the core game mechanics being built in and ready to use. It allows development to focus on the content rather than technical challenges. There are extensive resources online for learning to use the tool, as well as free assets. The tool has been selected for ease of use, learnability and development speed.

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3 Primary Project Methodology

3.1 Development methodology

The artefact will be developed using an agile-based, modular methodology. Meaning, that during the development phase the focus will be on creating a fully functional Minimum Viable Product as quickly as possible, so the experience can be tested, and errors corrected quickly. When the MVP is functional, it can be iterated and expanded on, to create a better experience. All further content will be broken down into individual tasks, that can each be implemented in a predictable timeframe. These tasks will be prioritized to create a backlog that can provide the content of sprints throughout the development phase. This creates a flexible framework, that allows development to be cut off at any point after the MVP is finished, and still have a functional, testable product.

First step will be to create a set of requirements identified based on the literature review. Next a design document will be created to fulfil these requirements. The document will detail story, combat, environment, level design and everything needed for the game experience. It will not include base RPG mechanics, as the created artefact is a game modification and not a full game, and therefore it relies on the mechanics of The Elder Scrolls V: Skyrim (Bethesda Game Studios, 2011). It will however include content specific to moral development.

The design will be tested as a paper prototype, to make sure it is entertaining, and the moral dilemmas engaging. This should be conducted through a pen-and-paper role-playing game system such as Dungeons and Dragons, in one-on-one sessions with individual players, where the designer runs the game as Game Master. Player behaviour can be observed during play, data gathered on chosen solutions, and players may provide feedback. Information gathered from these playtest sessions should afterwards be incorporated into the design. Due to the nature of tabletop roleplaying systems, there may be a discrepancy between actions players may want to take in the paper prototype and those available in the digital game. In these cases, player actions must be limited to what is actually accessible in the game, to make sure the playtest data is applicable to the final game.

The final step is to develop the Game Mod based on the design created through the previous stages. It will be created for The Elder Scrolls V: Skyrim (Bethesda Game Studios, 2011), using the Skyrim Creation Kit (Bethesda Game Studios, 2012). This eliminates many technical and design hurdles of game development and provides a working engine, assets, and RPG system to create the educational content. This step will require a short learning period in its first week to learn the new tools. Learning resources and documentation are provided by the game's original developer as well as the extensive modding communities online. This will result in an accelerating rate of content production as the tools become easier to use with experience. The game experience should be developed using an agile methodology, playtesting and iterating frequently to create an experience that is both morally engaging and entertaining.

3.2 Research methodology

The research will use a pre-test, "intervention", post-test, quasi-experimental method. In the experiment the intervention is playing the digital artefact. Participants will be divided into an experimental and a control group, each expected to be of a size (n=~20). The experimental group will play the game before taking the second measure. The control group will simply take the measure twice with no intervention in between.

The participants will take the DIT-2 for the first time in December. In March, the experimental group will receive the artefact, and play it, then immediately afterwards complete the DIT-2 for a second time. The control group will simply take the DIT-2 again.

3.2.1 Subjects

The subjects will be volunteering university students, attending Glasgow Caledonian University. They will be recruited using leaflets, and digital advertising on social media, directly targeting students interested in computer gaming, such as members of the gaming society. They will all be adults and will give informed consent prior to the experiment. Ethics approval was granted by the university. The participants will not be in any kind of danger at any point. The collected data will be kept private, and not be shared with any 3rd parties.

3.2.2 Measures

The measures include a pre-survey, and a post survey with the same content.

The measure taken is the Defining Issues Test 2, comprised of 5 moral dilemmas, and each with a set of possible moral considerations or "standard items". The subject is asked to answer the dilemma, and then rate and rank the standard items in terms of their moral importance. Items that fit into their moral schemas will be rated high, and items that don't, will be rated low. Based on these ratings, the subject's moral schemas can be identified and ranked.

Because of the nature of the DIT-2, it is preferred that longer time passes between the two measures. Based on other ethics education related studies, it was decided that the longest reasonable wait time should be inserted between the two measures, which is 3 months in the current timeline. Because of this timing constraint, the first measure should be taken as early as possible. (Sorensen, Miller and Cabe, 2015; Lin et al., 2010; Singhapakdi, Vitell and Leelakulthanit, 1994) There is evidence that simply taking the DIT-2 multiple times has a positive impact on one's moral development, which further emphasises the importance of a control group. (Mayhew et al., 2014)

The collected data is then sent to the University of Alabama, who perform the scoring and produce the different schema scores used in the analysis.

Additionally, as a supplementary measure a small number (3-5) of participants will be contacted for an interview, to discuss their experience with the game and the DIT-2. This is to gain a deeper understanding of the gameplay experience and thinking of the participants. The Interview questions can be found in Appendix D.

3.2.3 Analysis

The gathered data will be analysed to identify how the subjects' morality has changed over the time period. An independent samples T-test will be performed to compare the Personal Interest Schema, Maintaining Norms Schema, Postconventional Schema, and N2 scores of the participants to the values produced in the initial measurement, and determine whether there was a statistically significant change in their moral development, compared to the control group. The hypothesis is that participants in the experimental group will have a significantly lower Personal Interest Schema score, and a significantly higher Postconventional Schema score and N2-score than the participants in the control group.

3.3 Limitations

Sample Size
The expected sample size (n=~30) is a lot smaller than the required sample size (n=102) for statistical significance, which means that the results will probably not be statistically significant.

Level of exposure
Ideally, the subjects would be exposed to an ethically challenging game regularly over the course of the study, but it is not feasible to produce enough game content, or expect the regular use of the game from the participants. Therefore, the effects of a single ethically challenging game session is measured.

Long term effects
Long term effects can't be assumed, as that would require repeated measures over the course of several additional months, which is out of scope of this study. Therefore, the results can only indicate the short-term effects of the game.

3.4 Progress Report
The University of Alabama, Center for the Study of Ethical Development has been contacted and the DIT-2 survey has been ordered. A survey file has been provided by them that can be used for data collection, as well as instructions on submitting the data for evaluation.

Participant recruitment has been started. Once the participants have been recruited, the initial measure of moral development can be taken.

Interview questions for the supplementary measure have been written, and can be found in Appendix D.

The design process of the artefact has started with the identification of requirements, which are summarized in Appendix C.

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Appendix

A – Objectives

Literature review and technology assessment objectives
[SO1] Study morality in videogames

An investigation of how to best represent morality in video games from a design perspective. This objective is mostly concerned with game mechanics and content, and other player expressions of moral judgement.

Identify any frameworks that may be used to design the digital artefact. Create a set of requirements for the digital artefact based on the literature.

[SO2] Identify best method to measure morality in a person

A detailed search through prior studies on morality to identify the best method of measuring one's moral development. The identified test will be used on subjects as described above. The initial literature review indicates the DIT-2 as the best candidate, but other alternatives might be available.

[SO3] Investigate ethics education research methods

Investigate existing studies into ethics education to identify the best practices in their research methodology.

[SO4] Technology Assessment

Examine and evaluate the development environment.

Primary research phase objectives
[PO1] Conduct initial measurement of moral development

First measurement of moral development in study participants. Should take place as early as possible.

[PO2] Design an RPG Mod that improves ethical thinking in players

Create a set of requirements for the digital artefact based on the literature. Create a design document for the game modification based on research conducted in the secondary phase.

[PO3] Test Design in Paper prototype

Test of paper prototype conducted in a pen-and-paper RPG system.

[PO4] Execute Development of Game Mod

Develop the Game Mod for an existing game with modification support, such as Neverwinter Nights, or The Elder Scrolls V: Skyrim.

[PO5] Test the effectiveness of the game in improving ethical thinking

Have subjects play the Game Mod and conduct the second morality test immediately afterwards.

[PO6] Analyse test results and draw conclusions

Analyse the gathered data to identify how the subjects' morality has changed over the time period, using an independent samples T-test. Draw conclusions from data.

B – Additional details

Heron & Belford's morality systems

Single Axis Exclusive – The player character's morality is measured along a single axis, with some permutation of "Good" and "Evil" at the extremes. The player gains points towards one of the extremes for their in-game actions. Examples are: *Star Wars: Knights of the Old Republic* (BioWare, 2003), *Red Dead: Redemption* (Rockstar San Diego, 2010), *Fallout 3* (Bethesda Game Studios, 2008)

Diegetic: Single Axis Complementary – The player character's morality is measured on two axes that accumulate points independently from each other, but are moral opposites. The two values represents the prevalence of each decision. Examples are: *Star Wars: The Old Republic* (BioWare, 2011) and *Mass Effect 3* (BioWare, 2012)

Multi-Axis Exclusive – 'A character has an "alignment" that is a point of convergence on several axes. Position on each axis is represented by a single value.' (Heron and Belford, 2019) Examples are: Dungeons and Dragons (TSR, 1974)

Multi-Axis Complementary – Similar to the single axis complementary, but with multiple axes that together make up the "alignment" of the character. Example: *Ultima IV* (Origin Systems, 1985)

Non-Diegetic or Reflective – These games have no representation of morality, and simply communicate the moral implications of actions through narrative and gameplay. Examples: The Witcher 3: Wild Hunt (2015, CD Project), Darkest Dungeon (2016, Merge Games)

Sicart's Principles

'Create an ethically relevant game world' – Meaning, the player must know that their ingame actions have moral relevance. Many games ignore morality completely, and therefore players don't expect to be ethically challenged by games. The game must signal to the players that in this case they must consider their actions from an ethical perspective as well.

'Do not quantize your player's actions: let them live in a world that reacts to their values' – The player should have freedom and agency over their ethical decisions.

'Exploit the tension of being an ethical player' – There is difficulty in being a moral person in the real world and so it should be in the game. Their morals should be challenged and taunted, but ethical agency should be respected.

'Insert other agents with constructivist capacities and possibilities' – When multiple players can freely construct their own ethics in the game, they can create ethical communities bringing their own values into the game world. E.g.: EVE Online (CCP Games, 2003)

'Challenge the poietic capacities of players by constraining them' – Meaning that in a game that depicts an ethically relevant world, limit the player's ethical decisions to unethical choices, likely clashing with the player's own morals.

Schrier's Goals

G1 - Enhance ethical awareness – Ethical awareness is an ability to recognize moral situations and dilemmas and realize the ethical implications of actions. Strong ethical awareness leads to more sound ethical decisions in the future. (Schrier, 2015)

G2 - Enhance emotional intelligence – Emotional intelligence is defined as "capacity to reason about emotions and of emotions to enhance thinking." (Mayer, Salovey and Caruso, 2004) A person of high emotional intelligence is more aware of their own emotions and can manage them better. This allows them to make more sound, better considered ethical decisions. (Schrier, 2015)

G3 - Practice care or empathy-related skills – Learning these skills allows one to identify and understand other's ethical thinking, end even integrate it into their own. (Schrier, 2015) **G4 - Practice Ethical reasoning** – Directly practicing analysing, understanding and thinking about moral dilemmas improves one's ability to make sound ethical decisions in the future. (Schrier, 2015)

G5 - Practice Ethical reflection – Reflecting on ethical issues and decisions – including one's own decisions, assumptions, and biases – is a crucial step in personal moral development. Having an experience is not enough to achieve transformative learning, one has to reflect on those experience to change. (Merriam, 2004)

G6 - Enhance Character – One of the primary goals in ethics education is to "enhance an individual's foundation in character overall." This includes "respect, responsibility, trustworthiness, caring, justice, fairness, civic virtue, and citizenship". (Schrier, 2015)

G7 - Cultivate facility with major ethics issues, approaches, and frame-works – Understanding ethical theory and tradition allows for a greater understanding of ethical issues and provides solutions based on existing philosophies and allows one to make better informed decisions. (Schrier, 2015)

Schrier's Strategies

In brackets is the goal they are each related to.

S1 - Emotion, mood and tone –The game improves the use of the players' emotional intelligence (G2) by evoking or exhibiting emotions or invoking empathy towards the point of view character. (Schrier, 2015)

S2 - Diaries or personal reflection devices – Games can allow ethical reflection (G5) by including a diary containing previous events in the game's timeline, as well as reflective moments, when previous events and decisions are discussed. (Schrier, 2015)

S3 - Role-taking and role-playing – These are widely used techniques in ethics education, and are a great fit for videogames, especially role-playing games. (G2, G3) (Schrier, 2015) **S4 - Story and narrative** – Game stories can provide examples of moral ideologies for the player, that they may learn from. It opens up new perspectives and allows insight into other people's lives. (G3, G5) (Schrier, 2015)

S5 - Modeling through avatar or character – The avatars and characters of a game can model different moral beliefs and behaviours. The player embodies or interacts with these characters, observing their ethics and gaining a deeper understanding of their own. (G2, G3) (Schrier, 2015)

S6 - Choices and consequences – Games following this strategy allow players to make choices (G4) in their gameplay and experience the different outcomes those choices create. The game provides clear feedback and causal links for the player to explore. More advanced examples

have complex scenarios with multiple choices to make and with short- and longterm outcomes (e.g. The Witcher 3: Wild Hunt (CD Project Red, 2015)) (Schrier, 2015) **S7 - Simulation** – A simulation is a game that models a complex system and allows the player to make a series of ethically-charged decisions (G4). (Schrier, 2015) An example mentioned by Schrier is The McDonalds Game where the player manages the McDonald's company from production to restaurant management, to corporate strategy. The game offers options such as bribing politicians, adding hormones to animal feed, or reprimanding employees to improve production. This differs from choices and consequences in that these aren't individual distinct decisions but integrated into a simulation of some aspect of the world.

S8 - Social interaction and collaboration – Social interaction can be an important part of ethics education. Cooperating or competing with other players or Non-player characters can help improve the player's empathy (G2) and ethical awareness (G1). (Schrier, 2015) **S9 - Deliberation, dialogue, and discourse** – Discussing cases of ethical judgement allows the player to practice ethical reflection (G5). Games using this strategy challenge the player avatar's ethics or decisions and force them to argue their points. (Schrier, 2015)

S10 - Application to real-world issues – These serious games involve modeling or referencing real-world events or issues. Schrier's example, The Migrant Train puts the player in the shoes of an illegal immigrant and an immigration officer showing a real-world issue from multiple perspectives. (G3) (Schrier, 2015)

S11 - Procedural exploration and interaction – This is a very subtle way a game can involve ethics; without simulation, obvious ethical choice or clear consequence to actions (G1). The ethical implications are communicated directly through the rules and mechanics, and can be discovered through exploration of the game. The game makes a statement about ethics through the way players play it (Schrier, 2015). Schrier's example is Papers please (2013, 3909 LLC) but a more recent one is Darkest Dungeon (Red Hook Studios, 2016), a game in which the player can recruit groups of adventurers to delve into a horrifying dungeon filled with terrible monsters in order to retrieve treasures. These dangerous encounters leave the adventurers scarred mentally and physically. The player can spend their resources to help them, or simply let them go and hire new adventurers. The game doesn't make this choice a clear ethical dilemma, it simply has the systems that create the dilemma, and leaves it to the player to discover it. (G4)

S12 - 'Nudges' or contextual and/or personalized clues – The game can provide nudges (subtle changes and calibration that affect decision-making (Selinger and Whyte, 2010)) or clues to motivate the player to be more ethically aware or sensitive, motivated, or reflective of ethics. (Schrier, 2015) (G6)

C – Artefact requirements

The literature provided a long series of guidelines for the design of the artefact which will be summarized here.

The artefact's educational goals are to 1) enhance ethical awareness, 2) Practice ethical reasoning, 3) Practice ethical reflection.

To achieve these goals, the artefact must create an ethically relevant world and communicate this to the player. It has to challenge the player's ethics through gameplay. The game may challenge the player through offering the strong gameplay reward, for an unethical choice.

Generally, however it is advised to stop the player's instrumental thinking from interfering in the ethical decisions, by eliminating gameplay-related incentives in moral dilemmas. The player will take on the role of an in-world character and gain insight into their morality. The player will make choices in moral dilemmas and be challenged by surrounding non-player characters on those decisions. The player will be allowed to reflect on their choices through conversation with non-player characters. The player will be subtly nudged towards more ethical choices through small in-game clues, such as items and environmental design. It is also important that the artefact balances educational content and entertainment. The artefact must remain an enjoyable and engaging game, or players will lose interest and the game will have no effect. Therefore, it is advised that the educational goals be tempered by generally entertaining content, such as environmental exploration, combat and gameplay rewards.

D – Interview Questions

Modified standard playtest interview questions (Patton, 2019), to target ethical play experience.

What were you doing in the experience?

What was your favourite moment or aspect of what you just played?

What was the most difficult decision in the game? What did you decide? Why?

What made it so difficult? Did the game offer any help?

Was there anything you wanted to do that you couldn't?

How would you describe this game to your friends and family?

Which one was your favourite dilemma in the DIT-2?

Which one was the hardest dilemma in the DIT-2? Why?

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